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Green Recovery M&E

Technical Note

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1. Introduction

The Climate Support Facility (CSF) is a multi-donor trust fund managed by the Climate Change Group of the World Bank. The CSF has two strategic priorities, the first of which aims to help countries build a carbon-neutral, climate-resilient recovery from COVID-19. The Green Recovery Initiative (GRI) is a program dedicated to delivering on this objective. A Technical Working Group (TWG) has been established by the CSF to develop knowledge for robust monitoring and evaluation (M&E) of green recovery efforts.

This technical note supports the TWG in elaborating the impact and outcomes narrative of green recovery. It does this by describing a theory of change for green recovery that can be used in the work of the CSF and other agencies, together with impact and outcome indicators for assessing progress.¹

2. Definition of Green Recovery

Wide differences in country context – and the mandates of international organizations – challenge the adoption of a single definition of green recovery. Several definitions have been proposed in the literature since the onset of the COVID-19 global pandemic (see Annex 1). The terminology on green recovery needs to engage with a range of pertinent issues. These issues include: i) deciding whether to focus on climate action or to take a wider framing that covers all environmental issues; ii) recognizing that a timescale for recovery should consider the linkages between short-term measures and long-term green transformation; and iii) adopting a systems perspective that recognizes the connectiveness between sector-based activity and the whole economy.

¹ This work is designed to complement the existing results framework of the CSF (CSF, 2021) that has initially identified a range of input-related indicators; the current effort is to add to this work by using a lens of enquiry that is more outcome-orientated.

At its meeting on September 30, 2021, the TWG agreed on the following definition of the term ‘green recovery’ to guide the work of the GRI:

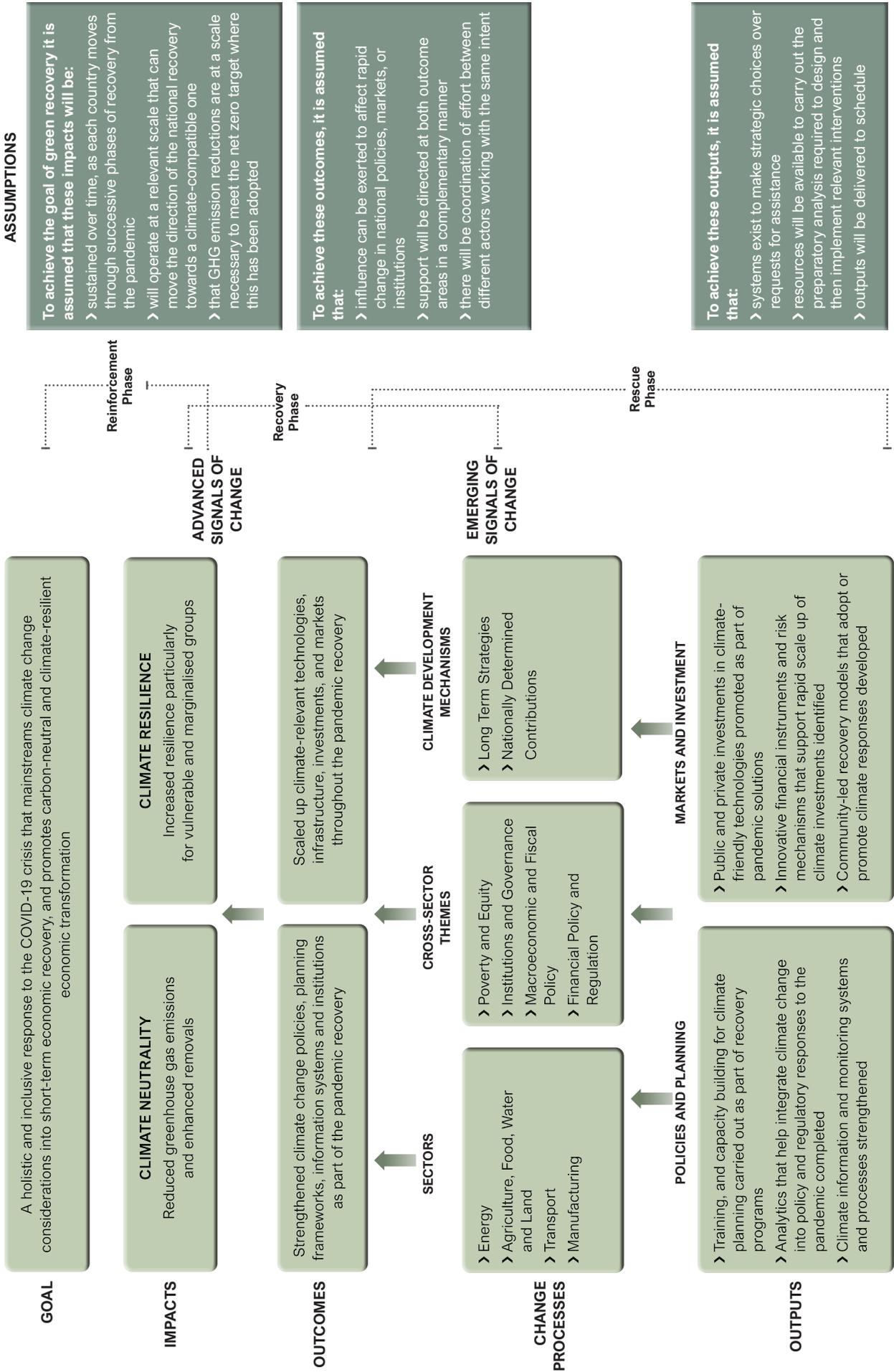
“A holistic and inclusive response to the COVID-19 crisis that mainstreams climate change considerations into short-term economic recovery, and promotes climate-neutral and climate-resilient economic transformation aligned with the goals of the Paris Agreement and the 2030 Agenda for Sustainable Development.”

This definition assumes that there is a common understanding of what the suggested economic transformation implies in different countries. This will need to be explored within a country’s particular national context/enabling environment. In linking the definition to the Sustainable Development Goals, it also encapsulates the notion that supported activities will respect the principle of ‘do no harm’ when it comes to environmental and social impacts.

3. Green Recovery Theory of Change

The green recovery theory of change (ToC) has been prepared from the perspective of offering a framework for how international initiatives, such as the CSF, can support partner countries in achieving a green recovery from the global COVID-19 pandemic (see Figure 1). It starts by identifying the long-term goal that is being sought, together with the intended impacts that derive from achieving that goal. Both the goal and impacts are set as national objectives to which international partners can contribute. The outcomes and outputs then relate with increasing granularity and definition to agency-supported activities.

► **FIGURE 1 | Theory of Change for Green Recovery (with a focus on climate change actions)**



3.1 Goal

The goal of this green recovery ToC is to illustrate how countries can rebound from the global COVID-19 pandemic, in which governments make a concentrated effort to restore health, economic, and social functions through climate-neutral policy measures. Although countries are starting to move beyond their immediate response to COVID-19, they are doing so at differing speeds, depending on the rate of COVID-19 infections and various economic and social parameters. With the possibility of new virus variants emerging, the timescale over which this goal will be achieved is highly uncertain. However, a ten-year timeframe has been selected for the ToC, as this should allow for a judgement to be made on whether the economic response to the global pandemic took account of the need to turn towards climate-compatible development.

Assumptions

This goal assumes that climate concerns are a significant part of governments' policy agendas during the pandemic recovery. The empirical evidence from early analysis (e.g., Hepburn et al., 2020; OECD, 2021) suggests that this assumption will need to be tested in each partner country through policy dialogue with government. In many countries, the shift from a high-carbon to a low-carbon economy represents a transformation in national development. Such change was highly ambitious even before the disruption caused by the pandemic. Yet, the likelihood of effective green recovery interventions will be very low without strong government commitment to a climate-neutral and climate-resilient future. It is also assumed that a good understanding of the risks and opportunities for climate action, and international cohesiveness for effective cooperation, exist.

3.2 Impacts

The two impacts expected of green recovery support measures are: (i) established climate-neutral pathways for national economies, and (ii) strengthened climate resilience (with an emphasis on vulnerable and marginalised groups). These two impacts are measured at the national level in each partner country.

Achievement of a climate-neutral pathway for an economy can be measured by net GHG emissions. This is a widely accepted metric with established international protocols that have been adopted by all countries. In contrast, there is lack of international consensus over what indicators to use to demonstrate strengthened climate resilience. However, there is a growing body of work on how to measure climate resilience within many potential partner countries.² An early stocktake of the indicators already in use can therefore help

² E.g., IDB (2019) "[A framework and principles for climate resilience metrics in financing operations](#)". IDB Discussion Paper No IDB-DP-00722.

determine the most appropriate indicators in each country. It may be that the choice of country-specific indicators will limit the potential for cross-country comparisons of this impact.

Assumptions

Whether these impacts will lead to the intended goal of a green recovery depends on several assumptions holding. First, it is assumed that the impacts will be sustained over time, as each country moves through successive phases of recovery from the pandemic. Second, the impacts will need to occur at a relevant scale that can make national recoveries climate-compatible. The latter assumption raises questions over how to identify pathways of change that move from sector-based recovery to influencing the whole economy. And third, as it relates to reducing GHG emissions, it is assumed that reductions are sufficient to meet any net zero targets adopted by countries. In cases where such targets are absent, investments and actions can be compared to global sectoral pathways to climate neutrality (if they exist and are relevant to the activity).

3.3 Outcomes

The CSF, alongside other initiatives, has to focus on delivering outcomes that it can realistically attain in order to contribute to the above two impacts. Within the green recovery ToC, one realistic goal for the CSF can be to influence World Bank operations. It can do so by identifying strategic outcome areas that will support green recovery, through advancing dialogue with client countries and design of WB activities,³ and by demonstrating how to assess progress toward achieving these outcomes. In this way, the CSF can become a learning laboratory relevant to the broader work of the World Bank and to other development agencies. As this experience develops, it should be shared through regular exchange with other key stakeholders.

Two outcomes have been identified and confirmed by the TWG for the work of the GRI:

1. Strengthened climate change policies, planning frameworks, information systems, and institutions as part of pandemic recovery. This outcome area is public sector-facing, working through national and local government administrations to strengthen the enabling environment for climate action (including private capital mobilization) as the pandemic recovery evolves.
2. Scaled up climate-relevant technologies, infrastructure, investments, and markets during the pandemic recovery period. This second outcome area looks to support economic actors (in both the public and private sector) to develop context-specific climate solutions post-COVID.

³ Including projects, financing operations, and advisory services and analytics (ASA).

There is a close synergy between the two outcomes. A green recovery will not happen through support to government policy and planning alone; new technologies and private enterprise will also be required. A consequence of this interdependency is that international support needs to be designed to fit the specific context in which it is planned, and such support should be aware of existing drivers of and barriers to change. For example, market development of climate-relevant technologies will depend on an enabling environment set by national policy. This emphasizes the need for all external agencies to take a programmatic approach, one that acknowledges the wider systems that operate beyond specific project interventions. Such an approach places greater weight on the project design stage and the analysis that underpins the choice of intervention. Effective implementation will then require an adaptive and responsive approach to capitalize on relevant opportunities that unfold beyond project boundaries.

Assumptions

Progress across these two outcome areas is not guaranteed without three assumptions holding. First, that international initiatives can help create the rapid change in national policies, markets, or institutions needed to achieve intended outcomes. Evidence from early recovery processes indicates that it is difficult for an external partner to influence rapidly moving national policies. A second assumption is that both outcome areas will receive complementary support. And finally, that there is coordination of effort between different actors working with the same intent, utilizing the comparative advantage of each agency working in a country.

There are also implicit assumptions in how these two outcomes will lead to the climate-neutral and climate-resilient impacts being sought in the ToC. A major assumption in many countries is that capacity exists to create the enabling environment and take the actions required for climate-compatible development. This extends beyond human capacity to include the financial resources available to the government and private sector, both of which have been severely impacted by the widespread economic downturn brought about by the pandemic.

3.4 Outputs

For global initiatives working on climate action, such as the CSF, activities and associated outputs in support of a green recovery should be determined with each partner country (which is also a goal of the World Bank country engagement process and broader dialogue). The following lists provide

examples of possible outputs that would contribute to achieving each outcome:

Outputs contributing to Outcome Area 1: more effective policies and planning

- › Training and capacity building for climate planning carried out as part of recovery programs.
- › Analytics, technical assistance, and projects that help integrate climate change into policy and regulatory responses to the pandemic (in the case of a World Bank Development Policy Operation).
- › Strengthened climate information and monitoring systems..

Outputs contributing to Outcome Area 2: more effective markets and investments

- › Public and private investments in climate-friendly technologies promoted as part of pandemic solutions.
- › Innovative financial instruments and risk mechanisms identified that support rapid scale-up of climate investments.
- › Community-led recovery models developed that adopt or promote climate responses.

Assumptions

At this level of the ToC, the assumptions that underpin output delivery tend to be operationally focused. For example, it is assumed that the CSF has the resources to carry out the preparatory analysis required to design and implement interventions. The CSF's response to country requests has to be set in the broader context mentioned above rather than a project-by-project response. It requires that the country government has climate-relevant policies and plans in place for the pandemic recovery period, and that the CSF can situate its proposed interventions within them in a politically supportive way. In addition, as the CSF will channel its interventions through World Bank engagement and lending, Bank projects need to be aligned with country policies. It is also assumed that the GRI of the CSF has internal systems to prioritize requests for assistance in a strategic, planned way.

A central assumption is that program management can deliver the outputs on schedule. However, the pandemic has demonstrated that project outputs are vulnerable to shocks. At this point in time, the trajectory of the pandemic recovery remains unknown, and will likely differ between countries. This should lead to greater emphasis being given to the management of risk.

4. Indicators for a Green Recovery

4.1 Impact Indicators

The two expected green recovery impacts outlined in the ToC constitute national-level change. These impacts would go beyond the control of any external agency, including the CSF. As both are national measures, it is recommended that the

CSF adopts the metrics that countries use in their periodic reporting to the UNFCCC (see Table 1). The CSF should not attempt to establish a parallel system of measurement, as this would be inefficient and undermine national ownership. Taking the proposed 10-year timeframe of the ToC, evidence of the two impacts could be collated periodically, at intervals that coincide with country reporting to the UNFCCC.

TABLE 1 Impact indicators

Impacts	Indicator	Source
Climate-neutral development pathways consistent with the goals of the Paris Agreement and the SDGs	GHG emissions in MtCO ₂ e	Long-term strategies Nationally Determined Contributions National greenhouse gas inventories
Increased climate resilience, particularly for vulnerable and marginalised groups	Country-specific indicators	National Adaptation Plans and other national reporting to UNFCCC (e.g., National Communications or Adaptation Communications within NDCs)

4.2 Outcome Indicators

Outcome indicators should measure the results of agencies' actions. As it takes a long time to observe outcomes, the concept of 'signals of change,' or early indications that change is underway in the intended direction, can add value by providing a means to track the influence an agency has on advancing a country's green recovery strategy. The Climate Investment Funds (CIF) has developed a framework composed of 'signals of transformational change' that may be effectively applied to the work of the CSF and others (Savage, 2020). The CIF distinguishes between interim and advanced signals across three dimensions of transformational change – systemic change, scale, and sustainability – which can then be applied to thematic areas of interest (e.g., clean energy, resilience). Two additional dimensions that are recognized, but not emphasized in the signals framework, include: i) relevance, which is initially captured in program design, and ii) speed, which is reflected in the timescale of short-term actions.⁴ The main distinction between emerging and advanced signals is that the former are mostly process-orientated indicators, whereas the latter are often results-based as outcomes start to materialize.

The World Bank's green, resilient, and inclusive development (GRID) framing also provides guidance on an approach to indicator selection (World Bank, 2021). GRID identifies three cross-cutting enablers where early progress is sought to secure a green recovery:

1. Investing in all forms of capital (human, physical, natural, and social).

2. Macroeconomic and structural policies, institutional strengthening, and technology innovation.

3. Mobilizing financial resources at scale, especially from the private sector.

There is potential to use these cross-cutting enablers to identify context-specific outcome indicators. A composite indicator framework that draws from both the CIF signals of transformational change and the GRID cross-cutting enablers can be compiled (see Table 2). The CIF terms of 'emerging signal' and 'advanced signal' have been adopted in preference over the generic term 'indicator'.

Initial planning could emphasise the emerging signals of change, in the expectation that these would be met within the first two years, whereas advanced signals might take several years to become apparent. Such an approach would need to be dynamic, with annual reviews leading to possible changes in emerging signals as relevant processes develop. The selection of outcome indicators will require political sensitivity and understanding in its application in each country. Such a framing could also apply to relevant support beyond the CSF.

This framework can apply across all the CSF thematic areas⁵ in a slightly differentiated way, acknowledging that change is context specific. These thematic areas can also be grouped into three generic categories to have wider applicability, targeting support at (i) sectors; (ii) cross-sector themes; and (iii) climate development mechanisms.

⁴ Annex 2 highlights the framing of transformational change as developed by the Climate Investment Funds. Five dimensions of transformational change are recognized.

⁵ Adaptive Social Protection, Agriculture and Food Security, Energy Transition, Green Transport, Green Finance, Macro-economic and Fiscal Policy, Institutions and Governance, Poverty and Equity, NDCs, and LTSs (Source: CSF internal application template).

TABLE 2 Outcome indicator framework

	Sustainability	Systemic Change	Scale
	Investing in all forms of capital to secure sustainability	Macroeconomic and structural policies, institutional strengthening, and technology innovation	Mobilizing financial resources at scale
Emerging signal	> e.g., planning of climate neutrality pathways complete	> e.g., constraints on private sector growth in climate-neutral industries identified	> e.g., investment plans with documented sources of finance produced
Advanced signal	> e.g., installed renewable energy-generating capacity (SDG indicator 7.b.1)	> e.g., reduction of subsidy regimes supporting carbon-intensive energy sources	> e.g., financial flows to support climate-neutral and climate-resilient technology

4.2.1 Sectors

The World Bank's Climate Change Group does not endorse a finite menu of climate indicators, recognizing that indicators should be designed to best suit each specific intervention. Therefore, the proposed sector-based signals are designed to apply across a range of sectors, to be refined for each planned intervention. The emerging signals are process mea-

asures, allowing for a binary assessment as to whether they have been completed by a certain point in time (Table 3). The advanced signals relate to states of performance, which need to be determined by sector in each country (Table 4). It would be possible to relate these states to national targets, allowing for a percentage level of achievement to be determined. This would allow for inter-country comparison.

TABLE 3 Sector-based Emerging Signals

	Energy	Agriculture	Transport	Manufacturing
Sustainability Investing in all forms of capital to secure sustainability	Sector-specific climate-neutral and/or climate-resilient actions identified as part of pandemic recovery plans (Y/N)			
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	New sector policy processes, regulatory measures, or institutional structures established to facilitate incorporation of climate change considerations during the recovery period (Y/N)			
Scale Mobilizing financial resources at scale	Short-term investment plans for climate actions with documented sources of finance produced (Y/N)			

TABLE 4 Sector-based Advanced Signals

	Energy	Agriculture	Transport	Manufacturing
Sustainability Investing in all forms of capital to secure sustainability	Level of natural, produced, human and/or social capital for CNCR ⁶ development (various measures, by sector)			
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	Regulatory reforms enacted, with strengthened public and private institutions to deliver CNCR development (various measures, by sector)			
Scale Mobilizing financial resources at scale	Level of private and public financial flows in support of CNCR development (US\$, by sector)			

⁶ CNCR: climate-neutral climate-resilient.

4.2.2 Cross-sector themes

For the cross-sector themes that the CSF (and other agencies) support, project coverage extends from the sector to the national level, and can apply across multiple sectors (Tables 5 and 6).

TABLE 5 Cross-sector Emerging Signals

	Poverty and Equity	Institutions and Governance	Macroeconomic & Fiscal ⁷ Policy	Financial Policy & Regulation
Sustainability Investing in all forms of capital to secure sustainability	CNCR actions as part of pandemic recovery plans consider distributional issues (Y/N)	CNCR-related institutional frameworks are recognized in pandemic recovery plans (Y/N)	CNCR-related policies are identified in pandemic recovery plans (Y/N)	CNCR-related financial flows are identified in pandemic recovery plans (Y/N)
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	CNCR-related national policy processes, regulatory measures, or institutional structures established during the recovery period address distributional issues (Y/N)	New CNCR-related institutional structures receive support during the recovery period (Y/N)	New CNCR-related national policy processes and regulatory measures established during the recovery period (Y/N)	New green finance policy processes, financial instruments or institutional structures established during the recovery period (Y/N)
Scale Mobilizing financial resources at scale	Short-term investment plans produced to facilitate CNCR initiatives providing direct funding to the most vulnerable, with documented sources of finance (Y/N)	Short-term investment plans direct funding to CNCR-related institutions, with documented sources of finance produced (Y/N)	Re-directed financial flows towards CNCR objectives documented (Y/N)	Short-term investment plans with documented sources of finance produced (Y/N)

TABLE 6 Cross-sector Advanced Signals

	Poverty and Equity	Institutions and Governance	Macroeconomic & Fiscal Policy	Financial Policy & Regulation
Sustainability Investing in all forms of capital to secure sustainability	Level of natural, produced, human and/or social capital for inclusive CNCR development (various measures)	Level of human and/or social capital for CNCR development (various measures)	Level of natural, produced, human and/or social capital for CNCR development (various measures)	Level of natural, produced, human and/or social capital for CNCR development (various measures)
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	Regulatory reforms enacted, with strengthened public and private institutions to deliver inclusive CNCR development (various measures)	Strengthened public and private institutional architecture to deliver CNCR development (various measures)	Strengthened national policy processes and regulatory measures to deliver CNCR development (various measures)	New financial instruments funding the delivery of CNCR development (various measures)
Scale Mobilizing financial resources at scale	Level of private and public financial flows in support of inclusive CNCR development (US\$)	Level of private and public financial flows in support of CNCR-related institutions (US\$)	Level of private and public financial flows in support of CNCR development (US\$)	Level of private and public financial flows in support of CNCR development (US\$)

⁷ Includes innovation and trade in the CSF whole-of-economy program.

4.2.3 Climate development mechanisms

In the case of external support to NDCs and LTSs, the boundaries of indicator selection are set by these two national processes (Tables 7 and 8). However, the nature of the indicators

remains consistent with the sector and cross-cutting themes of the CSF. These signals are also consistent with, and draw from, the indicators identified in the NDC Partnership Work Program, 2021-2025.

TABLE 7 Emerging Signals for Climate Development Mechanisms

	NDCs	Long-Term Strategies
Sustainability Investing in all forms of capital to secure sustainability	Increased capacity and resources to implement and update NDCs (Y/N)	Increased capacity and resources to develop LTSs (Y/N)
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	NDC targets integrated into national development policies, plans, and budgets during the recovery period (Y/N)	LTS targets integrated into national development policies, plans, and budgets during the recovery period (Y/N)
Scale Mobilizing financial resources at scale	NDC investment plans with documented sources of finance produced (Y/N)	LTS investment strategy with documented sources of finance produced (Y/N)

TABLE 8 Advanced Signals for Climate Development Mechanisms

	NDCs	Long-Term Strategies
Sustainability Investing in all forms of capital to secure sustainability	Level of natural, produced, human and/or social capital built as a result of NDC development (various measures)	Level of natural, produced, human and/or social capital (various measures)
Systemic Change Macroeconomic and structural policies, institutional strengthening, and technology innovation	Regulatory reforms enacted, with strengthened public and private institutions to deliver NDCs (various measures)	Regulatory reforms enacted, with strengthened public and private institutions to deliver LTSs (various measures)
Scale Mobilizing financial resources at scale	Level of private and public financial flows in support of NDCs (US\$)	Level of private and public financial flows in support of LTS (US\$)

4.3 Output indicators

There are many indicators that can be utilized at the output level to monitor change in the uptake of climate actions during the pandemic recovery period. These include those that are part of the Regulatory Indicators for Sustainable Energy (RISE), which cover electricity access, clean cooking, renew-

able energy, and energy efficiency.⁸ In addition, the World Bank's climate indicators team has compiled lists of several hundred indicators taken from results frameworks of recent World Bank operations across 16 sectors. This is a valuable resource that the CSF can also draw on for its planned interventions (see Annex 3 for examples of output indicators across sectors).

⁸ For further information see <https://rise.esmap.org/indicators>.

5. Conclusions

The ToC described in this technical note is a construct that links short-term pandemic recovery activities supported by international partners with countries' long-term trajectory towards a climate-neutral, climate-resilient economy. A framework to identify outcome indicators within this ToC has been developed, using the concept of signals of change adapted from the innovative work of the CIF to break down the period of time between the delivery of outputs and the appearance of outcomes. These signals consist of two categories. Emerging signals are short-term indicators of change which are process-orientated, while advanced signals are longer-term

indicators which tend to be product-orientated. This pragmatic framework has been designed to deliver an effective M&E approach for the actions supported by the CSF (and others) to bring about the change that all parties aspire to achieve.

In terms of next steps, the existing results framework of the CSF, the World Bank Group, and other agencies working on green recovery can be compared with this generic ToC to identify how all related initiatives are adding to the global effort to secure a green recovery. Such an exercise would advance inter-agency collaboration and coordination, allowing for cross-agency learning and potentially leading to more effective support to partner countries.

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Annex 1 Green Recovery Definitions

Introduction

This annex collates information on green recovery definitions. It is based on a rapid desk review of relevant literature that either defines or describes attributes of green recovery. This literature dates from the onset of the COVID-19 pandemic in early 2020, although reference is made to two World Bank papers written following the global financial crisis of 2008.

Publications on a Green Recovery

There is no universally accepted definition of the term 'green recovery.' First, the scope of the term 'green' varies, between a narrow approach considering only climate change mitigation; increasingly broader interpretations that include climate change adaptation and biodiversity protection; and its most holistic interpretation encompassing all environmental efforts. Second, although the latter term 'recovery' appears to be less ambiguous, several interpretations are also possible. For example, recovery might imply a short-term focus on the immediate aftereffects of the COVID-19 pandemic or include a longer-term perspective on what the economic trajectory of a country might look like. Some use the term "reinforcement" to demarcate a long-term perspective ([UNEP, 2021](#)).

The current economic growth model that prevails in high-income OECD countries has been under scrutiny for a number of years (e.g. [World Bank, 2012](#) and [Hickel and Hallegatte, 2021](#)), raising questions on the societal state that efforts to secure a recovery imply. It is also recognized that wide differences in country context – and the mandates of international organisations – challenge the applicability of a single definition of green recovery. Any generic definition of green recovery therefore likely needs to be broad, encompassing, and adaptable to the situation in which it is applied.

(i) Pre-COVID publications

Strand, J. and Toman, M. (2010): [“Green Stimulus, Economic Recovery and Long-Term Sustainable Development.”](#) Policy Research Working Paper 5163, Development Research Group, Environment and Energy Team. Washington D.C.: The World Bank.

In this paper, written following the 2008 global financial crisis, Strand and Toman define the term green stimulus as “the application of policies and measures to stimulate short-run economic activity while at the same time preserving, protecting and enhancing environmental and natural resource quality both near-term and longer-term.” As the authors acknowledge, this is a wide framing and the emphasis given to 'quality' raises questions as to the assessment metrics to be used. No taxon-

omy of green activities is offered in the paper, although clean energy and energy efficiency are highlighted when estimating the extent of green stimulus following the 2008 crisis.

World Bank (2012): [“Toward a Green, Clean, and Resilient World for All: A World Bank Group Environmental Strategy, 2012-2022.”](#) Washington D.C.: The World Bank.

This strategy document from 2012 defined 'green' in terms of sustainable economic growth. A focus on sustainability rather than consumption underpins the definition: “Green refers to a world in which natural resources are conserved and sustainably managed to improve livelihoods over time.” The strategy had three elements, with 'green' measures distinguished from 'clean' measures, where climate mitigation actions were placed. Climate change adaptation actions were found in a third element ('resilience') of the strategy's vision for a “green, clean, and resilient world for all”.

(ii) 2020 publications

Agrawala, S., Dussaux, D. and Monti, N. (2020): [“What Policies for Greening the Crisis Response and Economic Recovery? Lessons Learned from Past Green Stimulus Measures and Implications for the COVID-19 crisis.”](#) Environment Working Paper No. 164. Paris: OECD.

In this OECD paper, a green stimulus is defined as “the application of policies and measures to stimulate short run economic activity while at the same time preserving, protecting and enhancing environmental and natural resource quality both near-term and long-term,” citing Strand and Toman (2010) as the source of this definition. The paper's definition of 'green' clearly extends beyond climate-related concerns to broader environmental goals, and links back to the World Bank research of the early 2010s.

Barbier, E. (2020): [“Building a Greener Recovery: Lessons from the Great Recession.”](#) Geneva: UNEP.

This UNEP paper draws on evidence from the 2008 global financial crisis (including the author's own analysis) to inform the COVID-19 pandemic response. The paper stops short of defining a green recovery, referring instead to the existing literature on proposals for developing a 'greener' fiscal response. Examples of green investments cited include low-carbon energy, energy efficiency, pollution abatement and materials recycling.

EU Technical Expert Group on Sustainable Finance (2020): [“Financing a Sustainable European Economy. Technical Report. Taxonomy: Final Report of the Technical Expert Group on Sustainable Finance.”](#) Brussels: European Commission.

The European Green Deal is Europe's growth strategy consistent with climate neutrality and biodiversity conservation goals. The strategy is supported by a taxonomy of activities that are collectively labeled as 'green' and support six environmental

objectives: climate change mitigation; climate change adaptation; sustainable use and protection of water and marine resources; transition to a circular economy, water management and recycling; pollution prevention and control; and protection of healthy ecosystems.

Hepburn, C., O’Callaghan, B., Stern, N., Stiglitz, J., and Zenghelis, D. (2020): [“Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?”](#) Oxford Review of Economic Policy, Volume 36, Number S1, pp.S359-381.

This academic paper aims to determine how compatible post-pandemic economic measures are with climate goals: “This paper identifies stimulus policies that are perceived to deliver large economic multipliers, reasonably quickly, and shift our emissions trajectory towards net zero.” Specifically, attention is given to greenhouse gas (GHG) emissions: “Our subjective assessment [of national fiscal rescue measures] is that 4 per cent of policies are ‘green’, with potential to reduce long-run GHG emissions, 4 per cent are ‘brown’ and likely to increase net GHG emissions beyond the base case, and 92 per cent are ‘colourless’, meaning that they maintain the status quo.”

The authors’ use of the term ‘green’ refers to economic actions that reduce GHG emissions. However, the authors also acknowledge that “any recovery package, including climate-friendly recovery, is unlikely to be implemented unless it also addresses existing societal and political concerns—such as poverty alleviation, inequality, and social inclusion—which vary from country to country.” Success reducing GHG emissions will therefore be contingent on measures that also foster social inclusion. In addition, environmental outcomes (e.g., reduced pollution, biodiversity, and ecosystem sustainability) are framed as co-benefits of climate policies.

IMF (2020): [“Greening the Recovery.”](#) IMF Fiscal Affairs Department. Washington DC: International Monetary Fund.

This IMF note draws the attention of national fiscal policymakers to support a green recovery through policy actions during the pandemic recovery that support climate goals. The note highlights four themes for public investment projects: boosting climate-smart infrastructure; developing and adopting climate-smart technologies, supporting adaptation, and avoiding carbon-intensive investments. Green equates to climate actions.

OECD (2020): [“Making the Green Recovery Work for Jobs, Income and Growth.”](#) Paris: OECD.

Green recovery is not defined in this OECD policy brief, which frames pandemic recovery measures within global environmental issues. These go beyond climate change to include biodiversity loss, air and water pollution, and waste management.

Phillips, J., Heilmann, F., Reitzenstein, A. and Palmer, R. (2020): [“Green Recovery for Practitioners. Setting the Course towards a Sustainable, Inclusive and Resilient Transformation.”](#) Bonn and Eschborn: GLZ.

This paper provides an overview of green recovery, aimed at informing the work of economic advisers within economic, finance, and planning ministries. The paper highlights the medium- to long-term measures that can support structural reforms that promote sustainability, biodiversity protection, resilience, and climate neutrality. Green recovery is defined as “a transformative package of policies, investments and reforms that will ensure the recovery from the Covid-19 crisis has wide-ranging benefits for the climate, nature, communities, economies and workers.” The paper concludes with an overview of the then-existing green recovery literature.

UNEP (2020): [“Green Approaches to COVID-19 Recovery: Policy Note for Parliamentarians.”](#) Nairobi: UNEP.

This UNEP briefing for parliamentarians makes the case for countries’ COVID-19 economic stimulus packages to include efforts to promote a green economy. The paper identifies the core elements of a green economy as low-carbon development, resource efficiency, and social inclusion. It then details how recovery plans can prioritize green infrastructure and jobs, clean energy, waste management and circularity, biodiversity, and nature-based solutions, through policy and legislative reform.

UNEP (2020): [“Emissions Gap Report 2020”](#) Nairobi: UNEP.

The UNEP Emissions Gap Reports are annual science-based assessments of the gap between countries’ pledges on greenhouse gas emissions reductions and the reductions required to deliver a global temperature increase of below 2°C by the end of this century. Chapter 4 of the 2020 Report provided the first synthesis on green recovery measures by sector and selected case study examples.

(iii) 2021 publications

O’Callaghan, B., Murdock, E and Yau, N. (2021): [“Global Recovery Observatory. Draft Methodology Document.”](#) Draft of 1st February 2021. Oxford: Oxford University Economic Recovery Project, Smith School of Enterprise and the Environment.

The term ‘green recovery’ is not defined in this paper. Rather, the authors first develop a taxonomy of policy measures that have been applied as countries respond to the COVID-19 pandemic. They then make a subjective assessment of the environmental impact of each of these measures. Policies are assessed for their potential environmental impact (in terms of greenhouse gas emissions, air pollution, and natural capital), social impact (wealth inequality, quality of life, rural livelihoods) and economic impact (multiplier, speed of

implementation). These assessments consider the impact of a policy versus a scenario in which no intervention is made. The approach involves mapping policy items to a taxonomy of 40 archetypes and 158 sub-archetypes and then making Likert assessments based on evidence in the academic literature and inputs from environmental experts and economists.

O’Callaghan, B. and Murdock, E. (2021): *“Are We Building Back Better? Evidence from 2020 and Pathways to Inclusive Green Recovery Spending.”* Geneva: UNEP.

The definition of ‘green’ in this paper extends beyond a consideration of GHG emission reductions to include other environmental objectives: the reduction of air pollution and the strengthening of natural capital. While the first two metrics permit direct measurement, the last suggests a more qualitative assessment, using proxy indicators.

OECD (2021): *“The OECD Green Recovery Database: Examining the Environmental Implications of COVID-19 Recovery Policies.”* April 2021. Paris: OECD.

The OECD Green Recovery Database tracks environmentally focused measures in member countries and key partners (including most G20 countries). It also assesses whether they are likely to have positive, negative, or mixed impacts across several environmental dimensions, including climate change, biodiversity loss, pollution, and waste management. The extent of a green recovery is assessed by the number of COVID-19 economic recovery efforts with clear positive environmental impacts across one or more environmental categories.

Phillips, J. and Heilmann, F. (2021): *“Green Recovery for Practitioners. Examples from around the World for Building Forward Better.”* Bonn and Eschborn: GIZ.

This GIZ report defines green recovery as “a widely used term for packages of measures addressing the social, economic and political consequences of the Covid-19 crisis in a way that sets a course for long-term structural reforms and a transformative shift towards sustainability, biodiversity protection, resilience and climate neutrality.” Twenty-three examples of green recovery initiatives are documented. A major conclusion of the report is “striving for agenda coherence between climate, biodiversity, disaster risk reduction and sustainable development goals should be the guiding principle for designing and implementing green recovery measures.”

World Bank (2021): *“From COVID-19 Crisis Recovery to Resilient Recovery. Saving Lives and Livelihoods while Supporting Green, Resilient and Inclusive Development (GRID). Development Committee. April 2021.”* Washington D.C.: The World Bank.

The April 2021 publication from the WBG Development Committee frames the COVID-19 crisis response as focused on the provision of healthcare while supporting green, resilient, and inclusive development. The green element represents actions that “sustain natural capital, including climate, to ensure that today’s decisions are resilient and do not undermine tomorrow’s growth.” This definition identifies sustainability as the essence of what is meant by the term ‘green.’ Strengthened resilience and inclusive growth are framed as complementary dimensions of an integrated approach to achieving more sustainable and equitable recovery.

Wuppertal Institut and E3G, Germany (2021): Green Recovery Tracker website <https://www.greenrecoverytracker.org/>

The Green Recovery Tracker website assesses the national recovery plans of EU Member States for the inclusion of climate change mitigation actions, which contribute to a “green transition.” Measures are deemed “very positive” if they “make a significant, transformative contribution to climate change mitigation.” The key indicator used is the effect of any given measure on climate mitigation, i.e., GHG emission reductions, in the context of a transition to climate neutrality. The methodology builds on the [EU taxonomy](#) as well as on the climate tracking methodology outlined in [Annex VI of the EU RRF Regulation](#). The website acknowledges the potential gap of biodiversity and climate change adaptation measures in its coverage.

Annex 2 Transformational change concepts of the Climate Investment Funds⁹

The five dimensions of transformational change have been characterized into components in which signals of change can then be determined (see Figure 2).

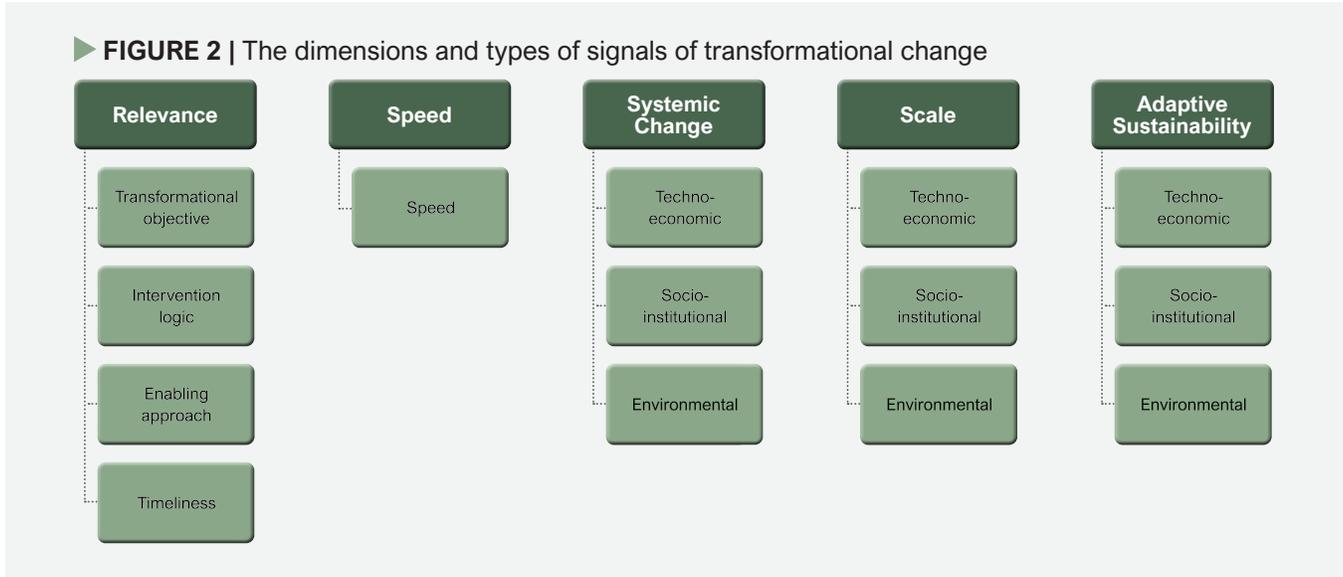
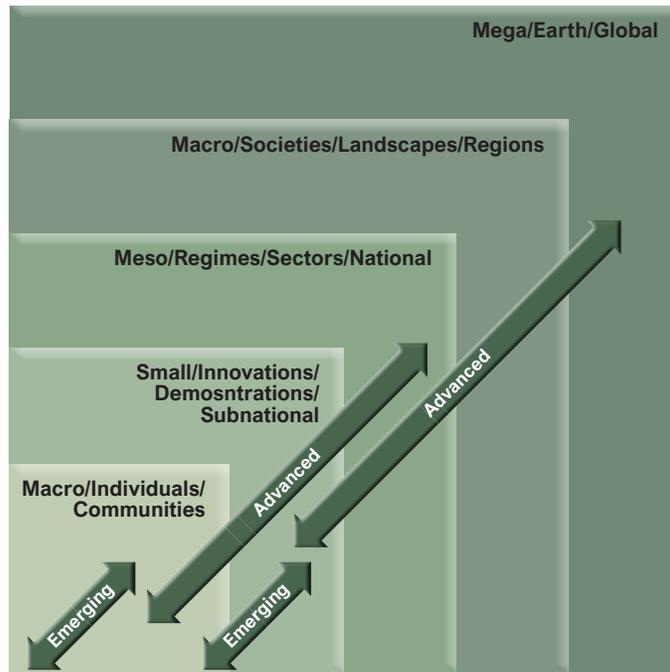


Figure 3 provides an insight into the scaling-up of transformational change, and the implied scope of change for both emerging and advanced signals.

► **FIGURE 3 | Transformational change pathways**



⁹ See: https://www.climateinvestmentfunds.org/sites/cif_enc/files/knowledge-documents/tclp_workshop_signalsenergy_framework_may2021.pdf

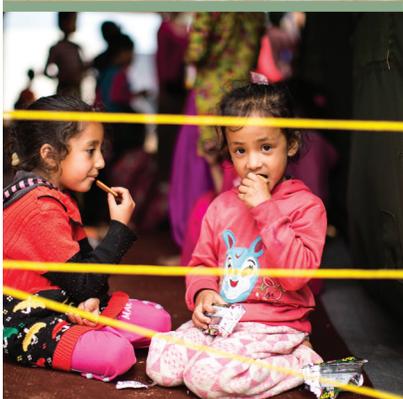
Annex 3

Examples of World Bank Operation-Level Climate Indicators

The following illustrative list¹⁰ of climate indicators was compiled by the World Bank's Climate Indicators Team based on a portfolio review of select World Bank operations.

Sectors	Examples of output climate indicators
Agriculture and Food	Increased productivity/farm income/yield of crops or livestock from incorporating climate-smart agricultural practices/technologies
	Area provided with new/improved irrigation or drainage services with climate-resilient features
	Number of provincial/state-level agriculture sector risk management plans approved that integrate climate and disaster risk considerations
Energy	Number of households/public institutions that received solar home systems or micro grids
	Number of industrial enterprises adopting improved energy-efficient technologies
	Power market reform enacted to encourage renewable energy use
Environment Natural Resources	Number of knowledge products on forest management prepared/implemented to increase carbon stocks
	Number of tourist sites in selected protected areas with climate-resilient infrastructure
	Climate-vulnerable watersheds recovered under sustainable land management practices
Finance Competitiveness, and Innovation	Share of funds fully disbursed in the form of climate adaptation loans
	Number of enterprises provided with an additional line of credit to improve resilience against climate change impacts
	Claims management system developed and used for post-disaster resource allocation (including for climate-related disasters)
Governance	Percentage reduction in tariffs to improve ease of procuring energy-efficient equipment
	Number of new emergency procurement tools and mechanisms in place for dealing with adverse climate events
	Number/value/share of contract awards based on climate-informed procurement criteria
Jobs and Development	Percentage of safety net beneficiaries, who use the livelihood grant to start up or continue a climate-resilient income-generating productive activity
	Beneficiaries of the food-for-work safety net program in food insecure and drought prone areas
	Number of individuals who benefited from climate-resilient farm, fishery and animal production-based wage employment
Social Protection	Establishment of an integrated and functional national safety net delivery system to provide cash transfers efficiently in climate vulnerable areas
	Number of groups/cooperatives accessing grants for investments to make assets climate-resilient
	Number of local authorities implementing harmonized targeting instruments to select climate vulnerable beneficiaries
Transport	Increase in subsidies on procuring low carbon vehicles
	Length of road receiving periodic climate-resilient maintenance
	Number of climate-informed territorial mobility plans developed
Water	Additional water production storage capacity constructed in water scarce areas
	Area under enhanced flood protection
	New pumping stations constructed and operational to improve flood management

¹⁰ This listing is for illustrative purposes only, it is not a mandated list of climate indicators.



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